

What Is Claimed Is:

1. A foot-operated gearshift/hand-operated clutch release unit for a motorcycle comprising:
 - a pedal pivotal about a pedal axis between a rest and loaded position in response to an external pressure;
 - a cam sub-assembly coupled to the pedal and selectively pivotal about the axis to a plurality of angular positions each corresponding to a respective speed-ratio position of transmission; and
 - a motion-translating link located between the pedal and the cam sub-assembly and configured to displace and retain the cam-subassembly in a respective one of the angular positions while allowing the pedal to return to the rest position thereof.
2. The unit of claim 1, wherein the cam sub-assembly has a cam and cam plate coupled together to synchronously pivot between the plurality of angular positions, the cam being configured to have a plurality of teeth variably shaped and dimensioned to correspond to a selected type of the transmission.
3. The unit of claim 2, wherein the cam and cam plate are welded together, cast as a unitary body or detachably coupled to one another to pivot in unison with the pedal in response to the application of the external pressure.
4. The unit of claim 3, wherein the motion-translating link is configured to have a ratchet mechanism coupled to the pedal for pivoting therewith in response to the external pressure and operatively and selectively engaging the teeth of the cam to actuate displacement of the cam and cam plate between the plurality of the angular positions.
5. The unit of claim 4, wherein the ratchet mechanism includes a two-arm pawl resiliently biased toward one another and displaceable angularly relative to one another about a pawl axis, which extends parallel to the pedal axis, one of the pawl arms

engaging a respective tooth of the cam so that the cam sub-assembly pivots to a desired one of the plurality of angular positions as the pedal pivots to the loaded position.

6. The unit of claim 5, further comprising a pawl shaft coupled to an inner side of the pedal to move therewith and extending parallel to and spaced from the pedal axis, the two-arm pawl being mounted on the pawl shaft so that when the pedal and the pawl shaft are displaced in response to the external pressure, one of the arms of the pawl engages a respective tooth of the plurality of teeth of the cam to transfer the angular displacement of the pedal to angular motion of the cam subassembly to a desired angular position.

7. The unit of claim 5, further comprising a stationary detent plate mounted to a frame of the motorcycle and juxtaposed with an inner side of the cam plate of the cam subassembly, the detent plate being provided with a pawl upset pin extending through the cam plate and having a free end engaged between the two arms of the pawl so that when the pawl shaft is displaced with the pedal from the rest position thereof, the other arm of the pawl is urged against the pawl upset pin and prevented from further displacement.

8. The unit of claim 6, wherein the cam plate has a pawl pin channel shaped and configured to receive the free end of the pawl upset pin and to limit the angular displacement of the cam subassembly relative to the pedal, the unit further comprising a pawl resilient element cooperating with the two-arm pawl and biasing the arms towards one another as the pedal and the pawl shaft return to the rest position of the pedal upon releasing the external pressure.

9. The unit of claim 8, further comprising a main pivot pin extending along the axis of the pedal and through the cam subassembly and the detent plate to be rotatably mounted to the frame of the motorcycle and fixed to the pedal by opposite ends thereof, the cam subassembly being mounted on the main pivot pin to rotate independently therefrom in response to a force applied by one of the arms of the pawl.

10. The unit of claim 8, wherein the pawl detent pin extends between the pedal axis and the pawl shaft and has an inner end opposite to the free end thereof extending through the detent plate, the unit further a pedal returning resilient element mounted on an inner side of the detent element and loaded against the inner end of the pawl upset pin and a distal end of the of the pawl shaft so that the pedal and pawl shaft return to the rest position of the pedal upon releasing the external pressure.

11. The unit of claim 10, wherein the pedal returning resilient element is a spring configured to straddle the pawl shaft and the pawl-upset pin so that when the pedal is displaced, the spring and the pawl-upset pin in combination center the pedal in the rest position thereof upon releasing the external pressure.

12. The unit of claim 8, wherein the pawl resilient element includes a spring configured to have two arms straddling the pawl upset pin and mounted on the pawl shaft to exert a spring force urging the arms of the pawl against the teeth of the cam when the pedal returns to the rest position thereof.

13. The unit of claim 7, wherein the stationary detent plate is provided with a pawl shaft channel traversed by and cooperating with the pawl shaft to limit angular displacement of the pedal.

14. The unit of claim 7, wherein the inner side of the cam plate has a series of spring loaded detent balls extending towards the detent plate, which has a plurality of detents spaced apart in a pattern identical to a pattern defined by the series of spring loaded detent balls, the detent balls being retracted as the cam subassembly displaces relative to the detent plate to an aligned position, in which the detent balls are biased towards and received by respective detents to retain the cam subassembly in the desired angular position as the pedal return in the rest position.

15. The unit of claim 1, further comprising a shift linkage having one end detachably coupled to the cam-subassembly and an opposite end detachably coupled to a crank-bell assembly of the transmission, the shift linkage being so attached to the cam-subassembly that as the cam subassembly moves angularly the linkage is displaceable linearly to transfer the angular displacement of the cam subassembly to rotational motion of the crank-bell assembly.

16. The unit of claim 15, further comprising a hand-operated lever mounted on a handlebar of the motorcycle and actuating a clutch release mechanism to allow the shift linkage to actuate the crank-bell assembly.

17. The unit of claim 16, wherein the clutch release mechanism includes a tension cable having one end thereof attached to the hand-operated lever and an apposite end attached to a release lever pivotal between rest and loaded positions upon actuating the hand-operated lever and generating a force sufficient to release a clutch in the loaded position.

18. The unit of claim 17, wherein the clutch release mechanism further includes a piston configured to transfer the force generated by the release lever to a clutch pressure plate, whereas the force is sufficient to overcome a clutch spring pack to release the clutch.

19. The unit of claim 18, wherein the release lever has one opposite ends thereof attached to the tension cable and an opposite end provided with an opening configured to receive a shaft extending from and coupled with the piston, the unit further comprising a pin extending parallel to the shaft and having an end surface configured to allow the release lever to pivot thereabout to the loaded position of release lever while displacing the shaft and the piston to release the clutch.

20. The unit of claim 19, wherein the opening is configured to prevent the shaft from rotation, the unit further comprising an adjustable cable tensioning mechanism.

21. The unit of claim 14, wherein a number of the spring-loaded detent balls varies depending a force required to prevent displacement of the cam-subassembly from the aligned position upon displacing the pedal in the rest position thereof.

22. A kit for converting a hand-operated gearshift/foot-operated clutch release into a foot-operated gearshift/hand operated clutch release unit for a motorcycle comprising:

- a hand-operated clutch release assembly operative to release a clutch to selectively provide a plurality of speed-ratio positions; and

- a foot-operated gearshift assembly provided with:

- a pedal pivotally mounted on a frame of the motorcycle and pivotal about a pedal axis between a rest position and a loaded position in response to applying an external pressure,

- a cam subassembly pivotal about the pedal axis to a plurality of angular positions, each corresponding to a respective speed-ratio position, and

- a motion transferring assembly configured to have spaced apart pawl-upset and pawl shafts extending parallel to and offset from the pedal axis and a ratchet mechanism mounted on the pawl shaft and cooperating with the pawl-upset shaft to selectively displace the cam subassembly between and retain the cam assembly in each of the plurality of angular positions thereof as the pedal returns to the rest position.

23. The kit of claim 22, further comprising:

- a pedal return resilient element mounted to the frame of the motorcycle and configured to straddle the pawl-upset and pawl shafts to exert a force sufficient to return the pedal in the rest position upon releasing the external pressure,

- a pawl return resilient element spaced from the pedal return resilient element and configured to urge the pawl against the cam in a desired angular position thereof while straddling the pawl upset shaft, and

- a shift linkage mechanism coupling the cam subassembly to a crank-bell assembly provided with a shift fork lever to establish a desired speed-ratio position of gears.

24. The kit of claim 22, further comprising a stationary detent plate juxtaposed with the cam subassembly and a spring-loaded retain mechanism extending between the detent plate and the cam subassembly and selectively securing the cam subassembly against the detent plate in a desired angular position of the cam sub-assembly as the pedal return to the rest position.

25. The kit of claim 22, wherein the hand-operated clutch release assembly comprises a tension cable removably attachable to one end of a release lever, the release lever pivotal in response to tension applied by the tension cable to a loaded position, and

a clutch actuating mechanism configured to have a shaft detachably coupled to the release lever and a piston coupled to the shaft and operative to overcome pressure of a clutch spring pack upon displacing the release lever to the loaded position thereof.